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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of	)	Mail Stop APPEAL BRIEF-PATENTS
BRATZ et al.	)	Confirmation No.: 1890
Serial No. 10/043,241	)	Examiner: QAZI
Filing or 371(c) Date: January 14, 2002	)	Art Unit: 1616

For: SOLID MIXTURES BASED ON SULFONYLUREAS AND ADJUVANTS

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Typed or printed name of person signing this certificate: Jason D. Voight

Signature: J. D. Voight

Honorable Commissioner for Patents
Alexandria, Virginia 22313-1450

BRIEF ON APPEAL UNDER 37 C.F.R. §41.37

This is an appeal from the Examiner's final rejection of Claims 10-17 and 19-23 dated August 30, 2005. A Notice of Appeal was filed on November 30, 2005. Please charge the Appeal Brief fee and the one-month extension fee to the credit card listed on the enclosed form PTO-2038.

Real Party in Interest

The real party in interest is BASF Aktiengesellschaft, 67056 Ludwigshafen, Germany.

Related Appeals and Interferences

To the best of the undersigned's knowledge, there are no related appeals or interferences within the meaning of 37 CFR 1.192(c).

Status of the Claims

Claims 10-17 and 19-23 are pending. A copy of these claims is appended hereto.

03/01/2006 TLOI11 00000009 10043241

01 FC:1401 500.00 OP
02 FC:1251 120.00 OP

Status of the Amendments

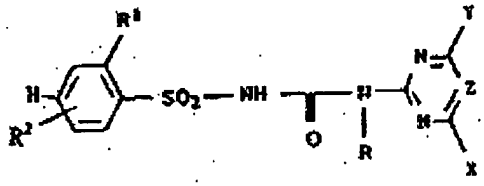
The claims were last amended on June 6, 2005. No amendments have been filed subsequent to final rejection.

Summary of the Claimed Subject Matter

Sulfonylureas (hereinafter "SUs") are a group of herbicides used in crop protection (specification page 1, lines 9-11). Since SUs are taken up through the leaves, SU activity can be improved by adding surfactants such as wetting agents (specification, page 1, lines 13-15). In agricultural practice, such wetting agents are added as mix additives to a spray liquor just prior to use (Id.). However, ready-to-use solid formulations that already contain an activity-increasing wetting agent would be desirable (specification page 1, lines 38-40). It would also be desirable to maximize the stability (i.e. minimize the tendency to decompose) of the SUs in such formulations (specification page 1, line 45, to page 2, line 1). The inventors have found that the use of alkylpolyglycosides as wetting agents in SU formulations results in unexpectedly pronounced stabilization of the active ingredient (specification page 3, lines 42-45).

Accordingly, the invention (claim 10) is a solid mixture of a SU herbicide and an alkylpolyglycoside (specification page 2, lines 35-40).

In a particularly preferred embodiment of the invention (claim 11), the SU has the formula



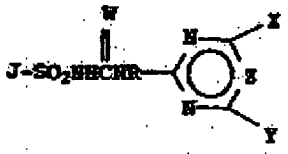
where R, R^1, R^2, X, Y and Z are defined in claim 11. This compound is Formula (I) in the specification (page 3, line 25) wherein J=J_1 (page 4, line 3) (please note that the phenyl group in J-1 clearly has H in the 4-position). J_1 is mentioned as a preferred embodiment at page 7, lines 36-37. See also page 9, line 31, to page 12, line 43 (please note that all of the compounds listed in the table contain H in the 4-position of the phenyl group).

In another preferred embodiment (claim 19), the solid mixture further comprises ammonium sulfate (specification page 3, line 7).

In another preferred embodiment (claim 20), the alkylpolyglycoside functions as a wetting agent (specification page 2, lines 42-43).

In another preferred embodiment (claim 21), the solid mixture comprises from 1 to 75% by weight of the alkylpolyglycoside (page 14, lines 20-22).

In another preferred embodiment of the invention (claim 22), the sulfonylurea has the formula



where J, R, W, X, Y and Z are defined in claim 22 (specification page 3, line 21, to page 6, line 26).

In another preferred embodiment of the invention (claim 23), the alkylpolyglycoside has the formula $R^{21}O(Z)_a$, where R^{21} and a are defined in claim 22 (specification page 13, lines 11-23).

Grounds of Rejection to be Reviewed on Appeal

Whether claims 10-17 and 19-21 are properly rejected under 35 U.S.C. 101 as claiming the same invention as U.S. Patent No. 6,482,772.

Whether the Examiner has properly refused to examine claims 22 and 23 (in part) on the ground that they are directed to a non-elected invention.

Whether claims 10-17 and 19-23 are properly rejected under 35 U.S.C. 103(a) as being unpatentable over Garst et al. (U.S. Patent No. 5,550,115).

Whether claims 1-17 and 19-23 are properly rejected under 35 U.S.C. 103(a) as being unpatentable over Malik et al. (U.S. Statutory Invention Registration H224) and Dupont (Dupont Escort®, Oust®, Telar® Product Information Bulletin).

Argument

Claims 10-17 and 19-21 stand rejected under 35 U.S.C. 101 (double-patenting) over U.S. 6,482,772. That patent has been disclaimed and Applicants enclose a copy of the Disclaimer

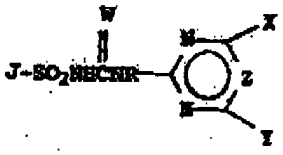
herewith. The Examiner has indicated that "[o]nce the disclaimer has been approved and processed, the rejection will be withdrawn." Applicants urge that the delay on the part of the Patent Office in approving and processing the Disclaimer should not be held against applicants and should not be grounds for maintaining the present rejection.

In any event, contrary to the Examiner, present claims 11 and 19-21 are not exactly the same as any claim in that patent. Thus, the statutory double-patenting rejection over said patent with respect to claims 11 and 19-21 is clearly erroneous.

Claims 22 and 23 (in part) have been withdrawn from consideration as being directed to a non-elected invention.

Initially, applicants urge that the Examiner's refusal to examine claims 22 and 23 to their full scope amounts to a rejection. See, e.g., *Ex parte Holt and Randell*, 214 USPQ 381, 383 (BPAI 1982) ("the refusal to examine a claim is, in effect, a rejection of that claim" under 35 U.S.C. 121). Thus this issue is properly before the Board.

Since the decisions in *In re Weber*, 580 F.2d 455, 198 USPQ 328 (CCPA 1978) and *In re Haas*, 580 F.2d 461, 198 USPQ 334 (CCPA 1978), it is improper for the Office to refuse to examine that which the applicants regard as their invention, unless the subject matter in a claim lacks unity of invention. *In re Harnisch*, 631 F.2d 716, 206 USPQ 300 (CCPA 1980); and *Ex parte Hozumi*, 3 USPQ2d 1059 (BPAI 1984). Unity of invention exists where compounds included within a Markush group share a common utility, and share a substantial structural feature disclosed as being essential to that utility. MPEP 803.02. Here, all of the species of claim 22 are sulfonylureas having herbicidal activity and having the formula



thereby sharing a substantial structural element. All of the species of claim 23 are alkylpolyglycosides serving as adjuvants and haveing the formula $R^{21}O(Z)_a$, thereby sharing a substantial structural element. Therefore, the Examiner has improperly rejected claims 22 and 23.

Furthermore, claims to be restricted to different species must be mutually exclusive. MPEP 806.04(f). Here, claims 22 and 23 are both dependent on claim 10. Accordingly, claim 10 does not contain any limitations that are not also present in claims 22 and 23. Therefore, the claims are not mutually exclusive and restriction is improper.

Claims 10-17 and 19-23 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Garst et al. (US 5,550,115).

Consideration and determination of obviousness under 35 U.S.C. 103, involves four factual inquiries: (1) determining the scope and contents of the prior art; (2) ascertaining the differences between the prior art and the claims in issue; (3) resolving the level of ordinary skill in the pertinent art; and (4) evaluating evidence of secondary considerations. MPEP 2141. "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." MPEP 2143.01. "Objective evidence or secondary considerations such as unexpected results...are relevant to the issue of obviousness and must be considered in every case in which they are present." MPEP 2141. Usually, a showing of unexpected results is sufficient to overcome a *prima facie* case of obviousness." MPEP 2144.08(II)(B); see also *In re Dillon*, 919 F.2d 688, 692, 16 USPQ2d 1897, 1900-01 (Fed. Cir. 1990).

It was an objective of the present invention to provide a solid sulfonylurea formulation that is less subject to decomposition. Applicants have discovered that this objective is achieved by the use of an alkylpolyglycoside as adjuvant.

Garst et al. is concerned with the performance of the surfactant, i.e. on the one hand, said document deals with the tack of an agricultural chemical formulation comprising an agricultural active ingredient and an alkylpolyglycoside as surfactant and on the other hand said document deals with the emulsifying properties of the surfactant when the agricultural formulation is mixed with water (see column 1, lines 47-57). This document does not address the problem of decomposition of an agriculturally active ingredient, much less the problem of sulfonylurea decomposition in said formulations.

In order to solve the problem overcome by the present invention, a skilled person would have had to find out which of a large number of adjuvants disclosed in the art (see introductory

part of the specification) fulfill the above-mentioned requirements. This would have required performing a large number of extensive and complex investigations which are beyond routine experimentation. Therefore, the increased stability of sulfonylureas when formulated with alkylpolyglycosides, was not predictable from the prior art. As a consequence, the claimed subject matter would not have been obvious in view of Garst et al.

In any event, the unexpected results of the present invention rebut any *prima facie* case of obviousness. The beneficial effects of the alkyl polyglycosides on the stability of SU are supported by the results of Table 3 of the specification, wherein the relative level of active SU after 14 days at 54°C is given for several formulations. As can be seen, the formulations (not according to the invention) which contain either fatty alcohol ethoxylate, ethoxylated fatty amine or E.O./PO block copolymer as an adjuvant suffer a relatively drastic loss of activity after 14 days. Loss of activity is much smaller for the compositions 1 to 18 (according to the invention) which contain alkyl polyglycosides as adjuvants.

Applicants bring particular attention to Examples 15 and 16 and Comparative Example 4. In each of those examples the level of active compound is the same 7.3% before storage. In Examples 15 and 16, an alkylpolyglycoside is mixed with the sulfonylurea. As is shown in the second column from the right in Table 3, in Examples 15 and 16 and Comparative Example 4, the level of active sulfonylurea after 14 days storage at 54°C is reduced to 62%, 70% and 48%, respectively, of the initial level before storage. Thus, use of the present invention increased the relative level of active compound after 14 days of storage from 48% for the comparative example, to 62% or 70% for the examples according to the invention. Such results were unexpected and overcome the rejection over Garst et al. All of the data being compared in the second column from the right are percentages of active SU relative to the initial level.

Additionally, applicants note comparative examples C1 and C2, wherein the level of active compound in percent at the beginning is much lower than the amount of SU which is employed in the formulation. The amount of SU in example 1 and comparative example 1 should be about 5% by weight. However, when analyzed, the level of active compound was found to be much lower, i.e., 3.2% to 3.9%. These levels indicate that some of the SU has decomposed during the preparation of the formulation. On the other hand, the level of active compound in Example 1 corresponds to the amount of SU employed in the formulation,

indicating that no decomposition has taken place. This beneficial effect could not have been foreseen in light of the prior art since Garst et al. does not address the problem of SU decomposition in a solid formulation.

To the extent the Examiner might argue that the showing of unexpected results is not commensurate with the scope of the claims, applicants note that every SU contains a structural unit as shown at page 3, lines 15 to 20 of the specification. This structural unit is prone to undergo hydrolysis even when formulated as a solid. The data in Table 3 reflect the instability due to hydrolysis. The present inventors have found that hydrolysis can be suppressed and thus the stability increased by formulating SUs together with alkylpolyglycosides. Since the increase in stability can be attributed to the suppressed hydrolysis of the sulfonylurea structural unit, the results for methsulfuron methyl shown in Table 3 can be generalized to any sulfonylurea compound.

In summary, the data in the present specification clearly demonstrate that irrespective of the active ingredient concentration, high stability levels for sulfonylureas are achieved when using alkylpolyglycosides while the stability levels for sulfonylureas in solid formulations is poor when using other surfactants. The best result for the comparative is 48% relative level after 14 days at 54°C (comparision example C4), while the worst result of an inventive composition is 62% (examples 11 and 15 which are an exact side-by-side comparison).

Claims 10-17 and 19-23 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Malik et al. (US H224) and Dupont (Escort, Oust, Telar Product Information Bulletin).

Malik et al. discloses a composition comprising a herbicide and a glycoside dispersing agent. Although said document lists many suitable herbicides in column 4, lines 18-65, said document does not mention any sulfonylurea as active ingredient. Therefore, said document does not disclose the combination of sulfonylureas and alkylpolyglycosides in solid formulations.

Malik et al. addresses the emulsifying and dispersing capabilities of the dispersing agent, i.e. low volatility and high resistance to being removed by rain from the surface of a growing plant (see column 1, lines 54-65). This reference does not give any hint that glycoside dispersing agents are suitable to stabilize labile active ingredients in solid formulations. Malik et al. further

fails to address the problem of sulfonylurea decomposition in solid formulations. Therefore, a person having ordinary skill in the art would not have expected that alkylpolyglycosides are useful for both enhancing the activity of sulfonylureas and increasing their stability in solid formulations. As a consequence, the claimed subject matter is not rendered obvious by Malik et al.

The Dupont Product Information Bulletin refers to formulations comprising Escort, Oust and Telar, respectively, in the form of dispersible granules. Said document is silent on the surfactant used.

The Dupont document teaches that Escort, Oust and Telar, respectively, are prone to undergo hydrolysis (see first paragraph on page 2) and that the half-life decreases rapidly as the temperature increases from 45 to 95°F (corresponding to 7.2 to 35°C) – see paragraph below the "Hydrolysis Half-Life Table" on page 2. It is well known that the dependence of the reaction rate on the temperature is given by the Van't Hoff law. As a rule of thumb (which can be estimated by the Van't Hoff law) an increase in temperature of 10K results approximately in a doubling to quadrupling of the reaction rate. From Dupont we learn that at pH 5 and 25°C, Escort has a hydrolisys half-life of 21 days, Oust has one of 14 days and Telar has one of 23 days. Since an increase in temperature of approximately 30K should result in an increase of the decomposition rate about 8 to 64 times (= 23 to 43), Escort should have a hydrolysis half-life of not more than 2.6 days, Oust should have one of not more than 1.75 days and Telar should have one of not more than 2.88 days at 55°C and pH 5. As a consequence, the solid sulfonylurea formulations of Dupont have only a low hydrolysis half-life at higher temperatures, e.g. at 55°C and after 14 days the sulfonylureas are decomposed to a great extent. Thus, Dupont confirms the instability of sulfonylureas in solid formulations and fails to teach how to overcome this problem.

The unexpected results, discussed above, further evidence the patentability of the present invention in over of Malik et al. and Dupont.

Thus, the present invention is patentable and the Examiner should be reversed.

BRATZ et al., Ser. No. 10/043,241

Please charge any shortage in fees due in connection with the filing of this paper to Deposit Account No. 14.1437. Please credit any excess fees to such account.

Respectfully submitted,
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Claims Appendix

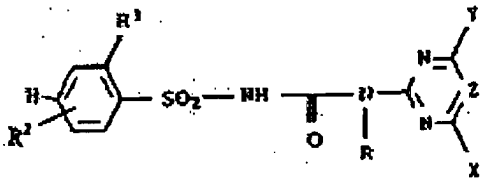
1-9. (canceled)

10. A solid mixture comprising

a) a sulfonylurea herbicide, and

b) an alkylpolyglycoside.

11. The solid mixture as claimed in claim 10, comprising a sulfonylurea of the formula



where:

R^1 is

C_1-C_4-alkyl, which may carry from one to five of the following groups: methoxy, ethoxy, SO_2CH_3, cyano, chlorine, fluorine, SCH_3, and $S(O)CH_3$,

halogen,

a group ER^{19} in which E is O, S or NR^{20},

$COOR^{12}$,

NO_2,

$S(O)_nR^{17}$, $SO_2NR^{15}R^{16}$ or $CONR^{13}R^{14}$;

R^2 is hydrogen, methyl, halogen, methoxy, nitro, cyano, trifluoromethyl, trifluoromethoxy, difluoromethoxy or methylthio;

Y is F, CF_3, CF_2Cl, CF_2H, OCF_3, OCF_2Cl, C_1-C_4-alkyl or C_1-C_4-alkoxy;

X is C_1-C_2-alkoxy, C_1-C_2-alkyl, C_1-C_2-alkylthio, C_1-C_2-alkylamino, di-C_1-C_2-alkylamino, halogen, C_1-C_2-haloalkyl, C_1-C_2-haloalkoxy;

R is hydrogen or methyl;

R^{19} is C_1-C_4-alkyl, C_2-C_4-alkenyl, C_2-C_4-alkynyl or C_3-C_6-cycloalkyl, each of which may carry from 1 to 5 halogen atoms, furthermore, in the case that E is O or NR^{20}, R^{19} is also methylsulfonyl, ethylsulfonyl, trifluoromethylsulfonyl, allylsulfonyl, propargylsulfonyl or dimethylsulfamoyl;

R^{20} is hydrogen, methyl or ethyl;

R^{12} is a C_1-C_4-alkyl group which may carry up to three of the following radicals: halogen, C_1-C_4-alkoxy, allyl or propargyl;

R^{17} is a C_1-C_4-alkyl group which may carry from one to three of the following radicals: halogen, C_1-C_4-alkoxy, allyl or propargyl;

R^{15} is hydrogen, a C_1-C_2-alkoxy group or a C_1-C_4-alkyl group;

R^{16} is hydrogen or a C_1-C_4-alkyl group;

R^{13} is H, C_1-C_4-alkyl, or C_1-C_4-alkoxy;

R^{14} is C_1-C_4-alkyl;

n is 1 - 2; and

Z is N or CH.

12. The solid mixture as claimed in claim 10, comprising a further herbicidally active compound c).

13. The solid mixture as claimed in claim 10, comprising from 0.5 to 75% by weight of the component a).

14. The solid mixture as claimed in claim 10, comprising from 1 to 50% by weight of the component b).

15. The solid mixture as claimed in claim 10, comprising an alkylpolyglycoside having a degree of polymerization of 1-3.

16. The solid mixture as claimed in claim 15, comprising an alkylpolyglycoside having a degree of polymerization of 1-2.

17. A method of controlling undesirable plant growth, which comprises treating the plants and/or the area to be kept free of the plants with a herbicidal amount of a solid mixture as claimed in claim 10.

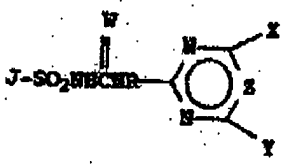
18. (canceled)

19. The solid mixture as claimed in claim 10, further comprising ammonium sulfate.

20. the method of claim 17, wherein the alkylpolyglycoside functions as a wetting agent.

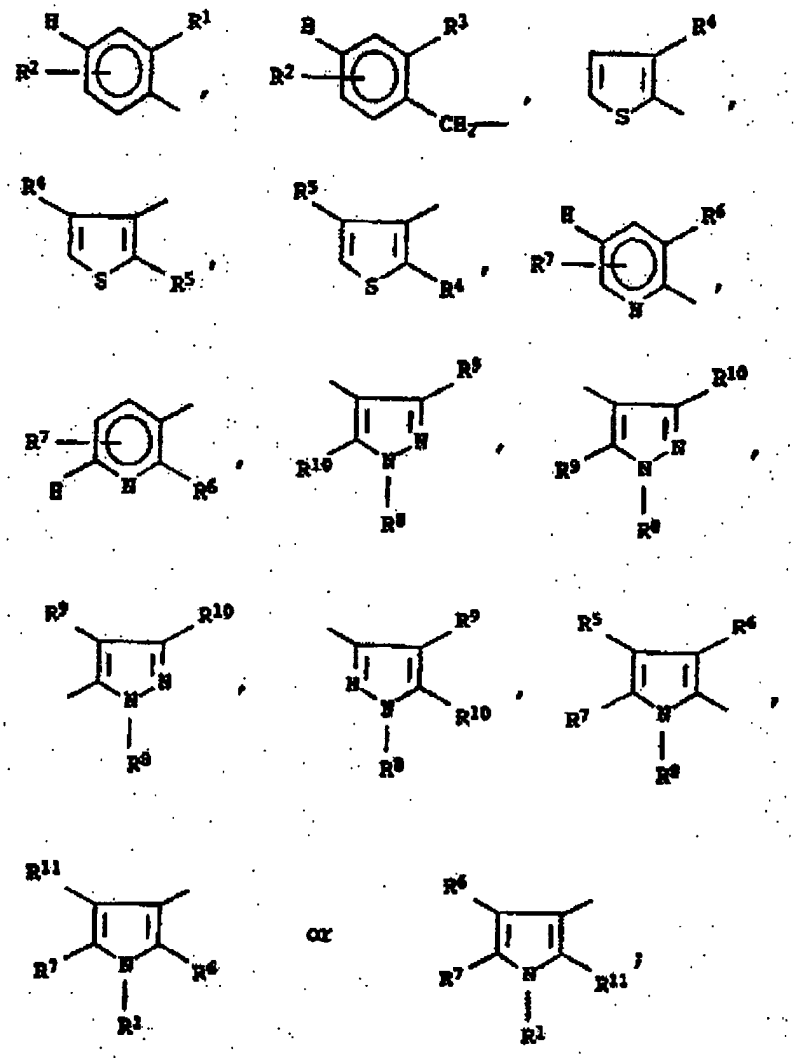
21. The solid mixture as claimed in claim 10, comprising from 1 to 75% by weight of the component b).

22. The solid mixture as claimed in claim 10, wherein the sulfonylurea has the formula



where

J is



R is H or CH_3;

R^1 is F, Cl, Br, NO_2, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_3-C_4-cycloalkyl, C_2-C_4-

haloalkenyl, C_1-C_4-alkoxy, C_1-C_4-haloalkoxy, C_2-C_4-alkoxyalkoxy, CO_2R^{12}, $C(O)NR^{13}R^{14}$, $SO_2NR^{15}R^{16}$, $S(O)_nR^{17}$, $C(O)R^{18}$, CH_2CN or L;

R^2 is H, F, Cl, Br, CN, CH_3, OCH_3, SCH_3, CF_3 or OCF_2H;

R^3 is Cl, NO_2, CO_2CH_3, $CO_2CH_2CH_3$, $SO_2N(CH_3)_2$, SO_2CH_3, $SO_2CH_2CH_3$, OCH_3, or OCH_2CH_3;

R^4 is C_1-C_3-alkyl, C_1-C_4-haloalkyl, C_1-C_4-alkoxy, C_2-C_4-haloalkenyl, F, Cl, Br, NO_2, CO_2R^{12}, $C(O)NR^{13}R^{14}$, $SO_2NR^{15}R^{16}$, $S(O)_nR^{17}$, $C(O)R^{18}$ or L;

R^5 is H, F, Cl, Br or CH_3;

R^6 is C_1-C_4-alkyl, C_1-C_4-alkoxy, C_2-C_4-haloalkenyl, F, Cl, Br, CO_2R^{12}, $C(O)NR^{13}R^{14}$, $SO_2NR^{15}R^{16}$, $S(O)_nR^{17}$, $C(O)R^{18}$ or L;

R^7 is H, F, Cl, CH_3 or CF_3;

R^8 is H, C_1-C_4-alkyl or pyridyl;

R^9 is C_1-C_4-alkyl, C_1-C_4-alkoxy, F, Cl, Br, NO_2, CO_2R^{12}, $SO_2NR^{15}R^{16}$, $S(O)_nR^{17}$, OCF_2H, $C(O)R^{18}$, C_2-C_4-haloalkenyl or L;

R^{10} is H, Cl, F, Br, C_1-C_4-alkyl or C_1-C_4-alkoxy;

R^{11} is H, C_1-C_4-alkyl, C_1-C_4-alkoxy, C_2-C_4-alkoxy; haloalkenyl, F, Cl, Br, CO_2R^{12}, $C(O)NR^{13}R^{14}$, $SO_2NR^{15}R^{16}$, $S(O)_nR^{17}$, $C(O)R^{18}$ or L;

R^{12} is C_1-C_4-alkyl, with or without substitution by halogen, C_1-C_4-alkoxy or CN; allyl or propargyl;

R^{13} is H, C_1-C_4-alkyl or C_1-C_4-alkoxy;

R^{14} is C_1-C_4-alkyl;

R^{15} is H, C_1-C_4-alkyl, C_1-C_4-alkoxy, allyl or cyclopropyl;

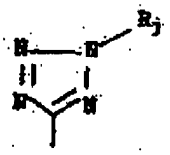
R^{16} is H or C_1-C_4-alkyl;

R^{17} is C_1-C_4-alkyl, C_1-C_4-haloalkyl, allyl or propargyl;

R^{18} is C_1-C_4-alkyl, C_1-C_4-haloalkyl or C_3-C_5-cycloalkyl, with or without substitution by halogen;

n is 0, 1 or 2;

L has the structure



where

R_j is H or C_1-C_3-alkyl;

W is O or S;

X is H, C_1-C_4-alkyl, C_1-C_4-alkoxy, C_1-C_4-haloalkoxy, C_1-C_4-haloalkyl, C_1-C_4-haloalkylthio, C_1-C_4-alkylthio, halogen, C_2-C_5-alkoxyalkyl, C_2-C_5-alkoxyalkoxy, amino, C_1-C_3-alkylaxnino or di(C_1-C_3-alkyl) amino;

Y is H, C_1-C_4-alkyl, C_1-C_4-alkoxy, C_1-C_4-haloalkoxy, C_1-C_4-alkylthio, C_1-C_4-haloalkylthio, C_2-C_5-alkoxyalkyl, C_2-C_5-alkoxyalkoxy, amino, C_1-C_3-alkylamino, di(C_1-C_3-alkyl)amino, C_3-C_4-alkenyloxy, C_3-C_4-alkanyloxy, C_2-C_5-alkylthioalkyl, C_2-C_5-alkylsulfinylalkyl, C_2-C_5-alkylsulfonylalkyl, C_1-C_4-haloalkyl, C_2-C_4-alkenyl, C_3-C_5-cycloalkyl, azido, fluorine or cyano; and

Z is CH or N;

or is an agriculturally useful salt thereof.

23. The solid mixture as claimed in claim 10, wherein the alkylpolyglycoside has the formula

$$R^{21}O(Z)_a$$

where R^{21} is an alkyl radical having from 4 to 30 carbon atoms and Z is a glycoside radical having from 5 to 6 carbon atoms and a is in the range from 1 to 6.

BRATZ et al., Ser. No. 10/043,241

Evidence Appendix

Disclaimer in Patent Under 37 CFR 1.321(a) of U.S. Patent No. 6,482,772.

BRATZ et al., Ser. No. 10/043,241

Related Proceedings Appendix

None.

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PTO/SB/43 (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

DISCLAIMER IN PATENT UNDER 37 CFR 1.321(a)

Name of Patentee	Docket Number (Optional)
BRATZ et al.	
Patent Number	**Date Patent Issued**
6,482,772	November 19, 2002

Title of Invention

SULPHONYL UREA AND ADJUVANT BASED SOLID MIXTURES

I hereby disclaim the following complete claims in the above identified patent: 1-9 (all claims)

The extent of my interest in said patent is (if assignee of record, state liber and page, or reel and frame, where assignment is recorded): Attorney

The fee for this disclaimer is set forth in 37 CFR 1.20(d). $110.00

- ☐ Patentee claims small entity status. See 37 CFR 1.27.
- ☐ Small entity status has already been established in this case, and is still proper.
- ☒ A check in the amount of the fee is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
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Signed at Wash. , State of DC , this 26 day of February 2004

/Herbert B Keil/
Signature

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